

ABSTRACT OF THE DISCLOSURE

1
2 A cathode for an electron tube, including a metal base and an electron-emitting material layer
3 coated on the metal base, where the electron-emitting material layer contains a needle-shaped
4 conductive material and the surface roughness corresponding to a distance between the highest point
5 and the lowest point on the surface of the electron-emitting material layer is controlled to be under
6 10 microns. A needle-shaped conductive material is contained in an electron-emitting material layer
7 to effectively form a conductive path, thereby minimizing the generation of Joule heat due to self-
heating of the electron-emitting material layer. Also, grain and pore sizes of the electron-emitting
material layer are uniformly controlled and the density and porosity of the electron-emitting material
layer are also controlled, thereby improving the density and surface planarity of the cathode
compared to the conventional cathode manufactured by a spraying method. Thus, during the
operation of the cathode, shrinkage of the cathode can be prevented and uniformity in the distance
between a cathode and a first grid can be maintained, thereby improving a lifetime characteristic and
exhibiting a stable emission characteristic. Therefore, the electron tube cathode can remarkably
improve a lifetime characteristic even for a high current density, which is needed for a larger and
higher-definition cathode-ray tube.